

**DRAFT**

APPENDIX A

HSHB-ME-SH (40)

MEMORANDUM FOR Commander, Army Environmental Center, ATTN:  
ENAECEC, Bldg E4435, Aberdeen Proving Ground,  
MD 21010-5401

SUBJECT: Interim Final Report, Lead-Based Paint Contaminated  
Debris - Waste Characterization Study No. 37-26-JK44, May 1992 -  
June 1993

Three copies of this report are enclosed. Questions regarding  
this report may be directed to Ms. Veronique Hauschild or Mr.  
John Resta, Chief, Hazardous and Medical Waste Branch.  
Additional comments or concerns may be directed to me. We can be  
contacted at DSN 584-3652 or commercial (410) 671-3652.

FOR THE COMMANDER:

Encl

JESSIE B. CABELLON  
LTC, MS  
Chief, Waste Disposal Engineering  
Division

CF (w/encl)  
HQDA (ENVR-E)  
DA, USAEHSC, ATTN: CEHSC-FU-S  
CDR, HSC, ATTN: HSCL-P  
CDR, USAEC, ATTN: ENAEC-TS-S  
CDR, USAEC, ATTN: ENAEC-RM(TIC) (2 cy)  
CDR, USAEHA-W  
CDR, USAEHA-S  
CDR, USAEHA-N  
CDR, AMC, ATTN: AMCSG  
CDR, FORSCOM, ATTN:  
CDR, TRADOC, ATTN:

EXECUTIVE SUMMARY  
INTERIM FINAL REPORT  
LEAD-BASED PAINT CONTAMINATED DEBRIS  
WASTE CHARACTERIZATION STUDY  
May 1992 -- March 1993

1. PURPOSE. This study was performed to assess the waste characteristics of debris that is contaminated with lead-based paint (LBP). The study focused on the debris generated from the demolition of Army WWII structures but also addresses other waste items such as those resulting from abatement and renovation activities.

2. CONCLUSIONS.

a. Characterization: Whole-Building Demolition Debris. The findings showed that (statistically) whole-building demolition debris (e.g., Army WWII-era structures) can be characterized as non-hazardous waste so long as certain assumptions/assertions are made:

(1) Other hazardous components such as asbestos or PCBs (from light ballasts and roofing tars) are not present/or are removed and disposed separately.

(2) Metals components such as ductwork, furnace/boilers, piping, siding are removed to the extent feasible possible as scrap materials for reuse/recycling.

(3) All remaining material (i.e., all those materials that were included in the sampling process such as both painted and unpainted wood components, brick, concrete/foundation material) must comprise a single wastestream at the point of generation (when the building is demolished). This wastestream must be handled as a single, discrete wastestream and disposed of all together.

b. Characterization: Small-Scale Debris. Debris that is generated during renovation, maintenance, or abatement activities such as paint chips, blast grit/media, or personal protective equipment is more likely to be characterized as "hazardous" due to the concentrated mass of LBP. For these types of wastes, hazardous waste generation can be minimized through waste segregation techniques. For some wastes cost savings can be achieved through minimizing sampling and analyses.

c. Disposal.

(1) NonHazardous Waste. While disposal in a construction/demolition (C/D) debris landfill may be appropriate and relatively inexpensive at this time, generators should consider other options that offer more than an "out-of-sight,

out-of-mind" solution. In fact, new/impending restrictions on C/D debris landfills may force the cost of this disposal option to greatly increase. Other options may be less expensive and/or more environmentally acceptable. State and/or local regulatory involvement will be necessary when assessing the feasibility of such alternatives.

(2) Hazardous Waste. The volume of LBP-related HW should be minimized to the extent most feasibly and economically possible. This can be done through careful assessment of operations and segregation of wastestreams as well as separation of contaminated items or removal of LBP.

(3) Recycling. Many items such as metal duct work, piping, and siding can be salvaged from buildings that are to be demolished for recycling/reuse. Recycling can provide economic gains in addition to the environmental benefits associated with a reduced wastestream.

### 3. RECOMMENDATIONS.

a. Identify whole-building demolition debris wastestream populations that meet the descriptions discussed in this report.

b. Characterize such waste as nonhazardous, pending concurrence from state and local agencies.

c. Identify other sources of lead-paint containing waste and debris. Determine appropriate waste segregation and management procedures based on cost-analyses and findings discussed above.

d. Evaluate the potential for environmental media (e.g., soil) contamination at demolition sites, specifically with regards to future-use scenarios and human health-risk.

e. Develop SOPs for demolition site operations to minimize environmental contamination and health hazards.

f. Assess current disposal procedures for demolition debris. Correct deficiencies/make amendments to contracts and/or SOPs with regard to final destination, liabilities, and control.

g. Evaluate disposal options and alternatives with regards to environmental and other regulatory requirements, cost, and other benefits/disadvantages as discussed above.

## MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Army Guidance Regarding Disposal of Lead-Based Paint (LBP) Wastes Generated at Military Residences

## 1. References:

a. Memorandum, EPA, Office of Solid Waste and Emergency Response, 31 Jul 00, subject: Regulatory Status of Waste Generated by Contractors and Residents from Lead-Based Paint Activities Conducted in Households (encl 1).

b. Memorandum, EPA, Office of General Counsel, 7 Mar 95, subject: Applicability of the Household Waste Exclusion to Lead-Contaminated Soil (encl 2).

c. Interim Final Report, U.S. Army Environmental Hygiene Agency, HSHP-ME-SH, May 1992 - May 1993, 3 Aug 93, subject: Interim Final Report, Lead-Based Paint Contaminated Debris - Waste Characterization Study No. 37-26-JK44-92.

2. The purpose of this memorandum is to update Army guidance based on the 31 Jul 00 memorandum issued by the U.S. Environmental Protection Agency (EPA) which clarified Resource Conservation and Recovery Act (RCRA) regulation of the disposal of wastes generated from LBP activities at residences ("LBP wastes"). See enclosure 1 or visit the website <http://www.epa.gov/lead/fslbp.htm>.

3. Where consistent with state requirements, Commanders shall dispose of LBP wastes generated at residences by Army personnel or contractors as a non-hazardous waste under the RCRA household waste exclusion. This policy guidance will be included in the next revision of AR 200-1, Environmental Management.

4. The EPA memorandum clarifies that LBP wastes generated through LBP abatement, renovation, remodeling or rehabilitation of residences is considered "household waste" under 40 CFR 261.4(b)(1), and is thus excluded from the universe of RCRA regulated hazardous wastes. Examples of Army buildings that fall within the RCRA definition of

SUBJECT: Army Guidance Regarding Disposal of Lead-Based Paint (LBP) Wastes  
Generated at Military Residences

households include BOQs, family housing, apartment buildings, guest housing, and military barracks. The memorandum emphasizes that the household exclusion applies to waste generated by either residents or contractors conducting LBP activities in residences. The exclusion does not apply to LBP wastes generated from buildings or locations other than residences, or to the non-residential portions of combined function buildings.

5. The memorandum points out that states may have more stringent regulations for LBP waste disposal. Installations should check with their environmental law specialist, and their state regulator, before disposing of LBP wastes under the RCRA household waste exclusion. If the household waste exclusion does not apply, the LBP waste may be subject to RCRA's hazardous waste regulations.
6. Installations should note that the EPA does not consider the household waste exclusion to include LBP debris or wastes from building demolition. See 49 Federal Regulation 44978 (13 Nov 84). The LBP wastes from building demolition debris, however, may be able to be disposed of as non-hazardous waste based on the generator's knowledge that the building as a whole is not hazardous, as revealed through Toxicity Characteristic Leaching Procedure testing (ref 1c). The EPA has proposed regulating certain LBP debris wastes under the Toxic Substances Control Act, but the EPA's LBP debris rule has not yet been finalized.
7. Installations should note that LBP wastes falling under the RCRA household waste exclusion should be disposed of in a municipal solid waste landfill. Disposal of LBP wastes under the household waste exclusion in a solid waste incinerator is also allowed.
8. Although not stated in the EPA memorandum, the household waste exclusion can be applied to lead in soil removed from the area around a residence. This fact is discussed in an earlier, 7 Mar 95, EPA memorandum (encl 2), that is referenced in the 31 Jul 00 EPA memorandum. The EPA states on page two of the 1995 memorandum: "If the source of the lead contamination was a result of either routine residential maintenance or the weathering or chalking of lead-based paint from the residence, the lead-contaminated soil in residential yards would be part of the household waste stream as defined in the household waste exclusion of 40 CFR § 261.4(b)(1), even if the soil exhibits the characteristic of toxicity under 40 CFR § 261.24. Under these circumstances, the soil would not be subject to the hazardous waste regulations under RCRA Subtitle C and may be . . . disposed of off-site in accordance with applicable RCRA Subtitle D regulations and/or state law."

SUBJECT: Army Guidance Regarding Disposal of Lead-Based Paint (LBP) Wastes  
Generated at Military Residences

9. Installations should also be aware that Department of Transportation (DOT) regulations governing hazardous materials may apply, even if the LBP waste is not regulated as hazardous waste. For example, concentrated LBP waste removed with chemical strippers may be classified as a DOT hazardous material. The Material Safety Data Sheet or the containers which hold the strippers should provide the DOT classification.

10. The U.S. Army Environmental Center point of contact for this matter is Mr. Michael Worsham, 410-436-7076. The Office of the Director of Environmental Programs point of contact is Mr. Douglas Warnock, 703-693-0549.

/s/

2 Encls  
as

STACEY K. HIRATA  
Colonel, GS  
Director, Environmental Programs

DISTRIBUTION:

COMMANDER

U.S. ARMY TRAINING AND DOCTRINE COMMAND, ATTN: ATBO-GE  
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AP 96205-0009

(CONT)

## OSHA Standards Interpretation and Compliance Letters

03/01/1999 - Using X-ray fluorescence for analysis of lead in paint and applicability of other agencies lead levels.

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- **Record Type:** Interpretation
- **Standard Number:** 1926.62(d)
- **Subject:** Using X-ray fluorescence for analysis of lead in paint and applicability of other agencies lead levels.
- **Information Date:** 03/01/1999

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March 1, 1999

Mr. Hsin H. Chou  
Project Manager  
Panacea Environmental Services  
7699 9th Street, Suite 102  
Buena Park, California 90621

Dear Mr. Chou:

Thank you for your letter of April 22, 1998, regarding the concentration of lead in paint which triggers the lead-in-construction standard, 29 CFR 1926.62. We regret this delay in responding.

The lead-in-construction standard was intended to apply to any detectable concentration of lead in paint, as even small concentrations of lead can result in unacceptable employee exposures depending upon on the method of removal and other workplace conditions. Since these conditions can vary greatly, the lead-in-construction standard was written to require exposure monitoring or the use of historical or objective data to ensure that employee exposures do not exceed the action level. Historical data may be applied to all construction tasks involving lead. Objective data was intended to apply to all tasks other than those listed under paragraph (d)(2) of the standard.

OSHA does not consider X-ray fluorescence (XRF) to be an acceptable method of analysis. As stated in your letter, XRF analyzers are generally considered accurate when concentrations of lead in paint exceed 1 mg/cm<sup>2</sup>. For the purposes of occupational health, these levels are considered substantial and may easily present an exposure hazard. Without having conducted monitoring, or without the benefit of historical or objective data, the employer has no assurance of the employee's exposure.

Other regulatory agencies, such as Housing and Urban Development, the Environmental Protection Agency, and the Consumer Products Safety Commission (CPSC) have designated levels of lead in paint below which they consider the paint to be non-lead containing. The missions of these agencies differ from OSHA's, and for that reason, OSHA cannot recognize these levels as safe under workplace situations.

OSHA has recognized, however, that for certain workplace conditions, application of

OSHA has recognized, however, that for certain workplace conditions, application of objective data to certain tasks listed in paragraph (d)(2)(i)(A) may be warranted (specifically, power tool cleaning with dust collection systems, manual demolition of structures, manual scraping, and manual sanding). For these applications only, we have adopted the CPSC threshold under a very limited set of conditions.

Specifically, when a paint contains trace amounts of lead (e.g., 0.06% and below, as defined by the Consumer Products Safety Commission as non-lead containing, 16 CFR 1303), the employer may determine the concentration of lead in the air (i.e., employee exposure) by multiplying the total airborne concentration of dust times the percentage of lead in the paint. For example, if the concentration of total dust is 15mg/m<sup>3</sup>; and the concentration of lead in paint is 0.06%, the airborne lead level will be (0.06%)x (15mg/m<sup>3</sup>;) x(1000µg/mg)=9µg/m<sup>3</sup>;. Consequently, the airborne concentration of dust would have to be 50mg/m<sup>3</sup>; before the action level of 30µg/m<sup>3</sup>; would be reached. Arithmetically, this would read, (50mg/m<sup>3</sup>; airborne paint)x (0.06% lead)x (1000µg/mg)=30µg/m<sup>3</sup>; airborne lead.

OSHA wants to stress that this does not set 0.06% as a lower threshold for the concentration of lead in paint which would exempt the employer from the requirements of the standard. The employer must still follow all requirements of the standard and conduct an exposure assessment for the tasks involving lead. Additionally, we are not stating that the Consumer Products Safety Commission level is a "safe" concentration of lead in paint, since all tasks listed under (d)(2) frequently entail exposures above the action level even at extremely low concentrations of lead. We are simply stating that the application of objective data may be applied to the above-specified tasks in paragraph (d)(2)(i)(A), under the conditions stated herein. As these are less aggressive, dust-generating methods of removal, this type of objective data may reasonably be applied.

We trust that this satisfactorily answers your concerns. If we may be of further assistance, please don't hesitate to contact the Office of Health Compliance Assistance on 202-693-2190.

Sincerely,

Richard E. Fairfax  
Director  
Directorate of Compliance Programs

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